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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/691,133	10/22/2003	Ernest C. Chen	PD-202129	4970

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EXAMINER	
BAYARD, EMMANUEL	

ART UNIT	PAPER NUMBER
2638	

DATE MAILED: 01/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/691,133	CHEN ET AL.	
	Examiner	Art Unit	
	Emmanuel Bayard	2638	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *11/7/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because after line 15 delete the "express mail.... Signature" labeled at the bottom of the page. Correction is required. See MPEP § 608.01(b).

Claim Objections

2. Claims 1, 8 are objected to because of the following informalities: in last line, after sequence insert a ---.--- respectively. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-2, 8-9, 15-16, are rejected under 35 U.S.C. 102(b) as being anticipated by Goldston et al U.S. Patent No 5,956,373.

As per claim 1, Goldston et al teaches a method of equalizing digital data signals, comprising: demodulating an input signal having input data to produce a data output (see fig.15 element 140 and col.10, lines 49-59); remodulating (see fig.15 element 142 and col.10, line 67 to col.11, line 1) the data output to produce a training sequence, wherein the training sequence is comprised of adjacent symbols in the input

data; and generating equalizer parameters (see fig.15 element 130 and col.11, lines 1-9) from the training sequence.

As per claim 2, Goldston et al does teach further comprising decoding the input signal after the demodulation (see fig.15 element 164).

As per claim 8, Goldston et al teaches an apparatus for equalizing digital data signals, comprising: means for demodulating an input signal having input data to produce a data output (see fig.15 element 140 and col.10, lines 49-59); means for remodulating the data output to produce a training sequence (see fig.15 element 142 and col.10, line 67 to col.11, line 1), wherein the training sequence is comprised of adjacent symbols in the input data; and means for generating equalizer parameters from the training sequence (see fig.15 element 130 and col.11, lines 1-9) from the training sequence.

As per claim 9, Goldston et al does teach comprising means for decoding the input signal after the demodulation (see fig.15 element 164).

As per claim 15, Goldston et al does teach an apparatus for equalizing digital data signals comprising: a demodulator for demodulating an input signal to produce a data output see fig.15 element 140 and col.10, lines 49-59); a modulator (see col.8, lines 5-10) communicatively coupled to the demodulator, for remodulating (see fig.15 element 142 and col.10, line 67 to col.11, line 1) the data output to produce a training sequence, wherein the training sequence is comprised of adjacent symbols in the input data; and a parameter generation module, communicatively coupled to the modulator, for generating equalizer parameters (see fig.15 element 130 and col.11, lines 1-9) from

the training sequence.

As per claim 6, Goldston et al does teach further comprising a decoder for decoding the input signal after the demodulation (see fig.15 element 164).

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claim 15 is rejected under 35 U.S.C. 102(b) as being anticipated by Baum et al U.S. Patent No 5,233,632.

As per claim 15, Baum et al teaches apparatus for equalizing digital data signals comprising: a demodulator for demodulating an input signal to produce a data output (see fig.2 element 215 and col.4, lines 20-40 and col.5, lines 8-9); a mixer is the same as the claimed (modulator), communicatively coupled to the demodulator, for remodulating (see fig.2 element 216 and col.5, lines 9-10) the data output to produce a training sequence, wherein the training sequence is comprised of adjacent symbols in the input data; and a parameter generation module, communicatively coupled to the modulator, for generating equalizer parameters (see fig.2 element 211 and col.5, lines 5-8) from the training sequence.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 22-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Tsujimoto U.S. Patent No 5,493,307.

As per claim 22, Tsujimoto teaches a blanket equalizer for equalizing digital data signals, comprising: a transversal filter (see figs.1, 3-5 element 109 and col.5, lines 55-56) for receiving a reconstructed symbol sequence from another equalizer (see element 111 and col.5, lines 55-60) and for filtering the reconstructed symbol sequence; and an adder for summing (see figs 1, 3-5 element 110 and col.11, lines 20-40) an input signal and the filtered reconstructed symbol sequence output from the transversal filter to create an estimated symbol sequence.

As per claim 23, Tsujimoto teaches wherein the input signal is filtered by a matched filter (see figs. 1, 3-5 element 9 and col.5, line 53) and the matched filter's output is input to the adder.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 3, 10, 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goldston et al U.S. Patent No 5,956,373 in view of Raith U.S. Patent No 6,535,497 B1.

As regard to claims 3, 10 and 17, Goldston et al teaches all the features of the claimed invention except a method comprising re-encoding the input signal prior to the remodulation.

Raith teaches method comprising re-encoding the input signal prior to the remodulation (see fig.8 and col.7, lines 57-65).

It would have been obvious to one of ordinary skill in the art to implement the teaching of Raith into Goldston as to successfully decode and demodulate symbol multiplexing as taught by Raith (see col7, lines 55-65).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. Claims 4-7, 11-14, 18-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goldston et al U.S. Patent No 5,956,373 in view of Nam U.S. Patent No 6,515,713.

As per claims 4, 11 and 18, Goldston et al teach all the features of the claimed invention except wherein the step of generating equalizer parameters comprises comparing the training sequence with the input signal to determine channel distortion.

Nam teaches generating equalizer parameters comprises comparing the training sequence with the input signal to determine channel distortion (see col.6, lines 38-48).

Itwould have been obvious to one of ordinary skill in the art to implement the teaching of Nam into Goldston as to allow the receiver to carry out effective equalization and accurate synchronization when there would be no moving ghost as taught by Nam (see col.6, lines 38-48).

As per claims 5, 12 and 19, Goldston and Nam in combination would teach wherein the step of generating equalizer parameters comprises subtracting the adjacent symbols from the input signal to reproduce channel impairments, wherein the channel impairments are subtracted from the input signal for equalization as to allow the receiver to carry out effective equalization and accurate synchronization when there would be no moving ghost.

As per claims 6, 13 and 20, Goldston and Nam in combination would teach wherein the channel impairments comprise inter-symbol interference as to allow the receiver to carry out effective equalization and accurate synchronization when there would be no moving ghost.

As per claims 7, 14 and 21, Nam teaches wherein the step buffering the input signal (see fig.6 element 305); and comparing the buffered input signal to the training sequence to produce the equalizer parameters (see col.6, lines 38-48). Furthermore

implementing such teaching into Golsdton et al would have been obvious tto one skilled in the art as to allow the receiver to carry out effective equalization and accurate synchronization when there would be no moving ghost as taught by Nam (see col.6, lines 38-48).

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Falconer et al U.S. Patent No 3,878,468 teaches a joint equalization.

Chen U.S. Patent No 6,775,521 B1 teaches a bad frame indicator.

Baum et al U.S. Patent No 5,233,632 teaches a communication system receiver.

Gitlin et al U.S. Patent No 4,253,184 teaches a phase-jitter compensation.

Monsen U.S. Patent No 3,879,664 teaches a high speed digital communication.

Falconer U.S. Patent No 3,974,449 teaches a joint decision feedback equalization.

Khayrallah et al U.S. Patent No 6,320,919 B1 teaches an adptive channel.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emmanuel Bayard whose telephone number is 571 272 3016. The examiner can normally be reached on Monday-Friday (7:Am-4:30PM) Alternate Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vanderpuye Kenneth can be reached on 571 272 3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Emmanuel Bayard
Primary Examiner
Art Unit 2638

1/13/06

EMMANUEL BAYARD
PRIMARY EXAMINER